From:	Draper, Cynthia E
To:	Saric, James
Cc:	Fortenberry, Chase; Griffith, Garry T.; Curtis, Emmet F; Lathrop, Alison J. (GP LAW); Davis, Michael (GP Law); Prytula, Mark T; Bondy, Garret E; Abid, Joseph A; Paul Bucholtz; King, Todd; "Jeff.Keiser@CH2M.com"
Subject:	Letter from GP to EPA addressing dioxins in Area 1
Date:	Wednesday, August 14, 2013 10:24:21 AM
Attachments:	2013 08 14 Area 1 Dioxin Letter.pdf

Jim

The attached letter is submitted on behalf of Chase Fortenberry of Georgia Pacific, LLC. Please contact Chase at lcforten@gapac.com or 404 652 6166 (office) or 404 539 3509 (cell) with questions or comments.

Cynthia Draper | Project Manager/Associate Engineer

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August 14, 2013

Mr. James Saric
Remedial Project Manager
USEPA Region 5
77 West Jackson Boulevard (SR-6J)
Chicago, Illinois 60604-3511

Subject: OU-5 Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site, Area 1 Dioxin Screening

Dear Mr. Saric:

On June 6, 2013, you sent an e-mail requesting that we review EPA Region V's final position paper regarding dioxins in association with the non-PCB evaluation previously provided in the Area 1 Supplemental Remedial Investigation (SRI) report, Appendix M.

Further evaluation on dioxins detected in Area 1 of OU5 was performed using available dioxin data and a summary of this evaluation is attached for your review. The evaluation was performed by comparing recent dioxin data for smallmouth bass fillets to the MDCH fish tissue screening criteria protective of human health and site-specific risk-based concentrations (RBCs) for fish tissue developed using the exposure scenarios from the baseline human health risk assessment (HHRA) performed by CDM in 2003. The smallmouth bass fillet tissue was selected to be consistent with the remedial action objectives provided in Section 2.2 of the July 29, 2013 Area 1 FS.

The Area 1 median fish tissue dioxin concentration allows for 8 meals per month for allowable fish consumption under the MDEQ categories, as discussed in the attachment. The median dioxin concentration in fish tissue for the most recent data (2009) is within acceptable limits for the subsistence angler, and high-end and central tendency sport anglers who consume smallmouth bass from Area 1. The median of the Area 1 fish samples was also less than the median of background samples. In summary, the median dioxin concentrations for smallmouth bass fish fillet tissue in Area 1 do not pose an unacceptable risk based on a comparison to risk-based screening levels and background for the recent sample results.

The above information was not included with the Area 1 FS submitted on July 29, 2013; however, we will be happy to provide this information in a final version of the FS, if acceptable to you.

If you have any questions, please do not hesitate to contact me.

L. Chase Fortenberry
Manager – Environmental Engineering, Environmental Affairs
Georgia-Pacific LLC

cc:
Paul Bucholtz, MDEQ
Jeff Keiser, CH_2MHill
Todd King, CDM-Smith
Garret Bondy, AMEC
Cynthia Draper, AMEC

Attachment to August 14, 2013 Letter from Chase Fortenberry, Georgia-Pacific to Jim Saric, USEPA

Area 1 Dioxin Screening for Smallmouth Bass Fish Fillets

The purpose of this document is to screen dioxins/furans (dioxin) concentrations in fish tissue in Area 1 of OU5 against Michigan Department of Community Health (MDCH) and USEPA risk values for the ingestion of fish. Dioxin analysis of fish tissue (smallmouth bass fillets) was performed in 1993, 2001, and 2009.

Dioxin analysis of soils and sediments were only performed in 1993/1994 and were not included in this evaluation because they were collected prior to the implementation of source control and sediment/soil removal actions and are not representative of current conditions.The1993/1994 dioxin soil/sediment samples were collected from the Willow Boulevard Landfill (OU2) and Area 1 river Section 8, prior to the implementation of source control measures at OU2 and the former Plainwell Impoundment time critical removal action (TCRA)

The 1993 and 2001 fish data from Area 1 were also not included in this evaluation for similar reasons, and are not considered representative of current conditions. Background smallmouth bass tissue data is limited to 1 sample per background area collected in 1993. These data were retained in this analysis because the background areas would not be impacted by Area 1 sources/TCRAs.

Table 1 below summarizes the number of adult fish fillet tissue samples by year.

Table 1: ***Number of Dioxin Samples in Smallmouth Bass Fillet Tissue***

Year	Smallmouth Bass	River Reach Section
1993	1	Ceresco (ABSA-01); Background
1993	1	Morrow (ABSA-02); Background
2009	10	Section 8

ABSA – Aquatic Biotic Study Area

Another fish tissue sampling event was conducted in 2011. However, the 2011 sampling event did not include smallmouth bass dioxin samples because data from previous events showed smallmouth bass dioxin/furan TEQ concentrations were infrequently detected, and when detected, were below the MDEQ screening level (Paul Bucholtz, personal communication, November 28, 2012).

The primary human health exposure pathway to dioxins in the aquatic environment is the ingestion of fish. Fish species at the top of the food chain and/or long-lived species, such as smallmouth bass can potentially accumulate dioxins within fatty tissues throughout their lifetime.

Recent dioxin data for smallmouth bass fillets was screened to the MDCH fish tissue screening criteria protective of human health (MDCH 2010, MDCH 2011, MDCH 2013) and site-specific risk-based concentrations (RBCs) for fish tissue developed using the exposure scenarios from the baseline human health risk assessment (HHRA) (CDM 2003). The individual dioxin congeners in fish tissue were converted to 2,3,7,8-TCDD

toxic equivalency quotients (TEQs) to provide direct comparison to screening criteria and RBCs.

Dioxins are known to be ubiquitous in the environment and are present at detectable levels in almost all environmental samples (represented by the background samples). The range of dioxin TEQ concentrations in background area smallmouth bass fillets were 0.83 to 1.2 parts per trillion (ppt) with a median background TEQ concentration of 1.0 ppt. The background dataset consists of only 2 samples and is not sufficient to provide a statistically significant background/reference area concentration.

The 2009 dioxin TEQ values were compared to the following MDCH screening criteria (MDCH 2010, MDEQ 2011, MDCH 2013) and site-specific RBCs calculated using input parameters and exposure scenarios from Figure 3-2 and Appendix B of the HHRA (CDM, 2003). The median Area 1 dioxin TEQ concentration was 0.73 ppt. Screening criteria and site-specific RBCs include:

- MDCH value of 0.5 parts ppt – Assumes 16 meals per month
- HHRA Site-specific RBC of 0.9 ppt - Subsistence Angler Scenario (179 meals per year or approximately 15 meals per month)
- HHRA Site-specific RBC of 2.5 ppt - High End Sport Angler Scenario (125 meals per year or approximately 10.5 meals per month)
- HHRA Site-specific RBC of 6.6 ppt - Central Tendency Sport Angler (24 meals per year or approximately 2 meals per month)
- MDCH value of 7.5 ppt – Assumes 1 meal per month
- MDCH value of 10 ppt – Screening value for fish advisories

The Table 2 below summarizes the number of samples and the percentage of samples by year that exceeded the MDCH screening values for smallmouth bass.

Table 2: ***Number and Percentage of 2009 Smallmouth Bass Fillet Tissue Samples Exceeding MDCH Dioxin Screening Values in Area 1 and Background***

2009	**MCDH (0.5 ppt)[a]**	**MDCH (7.5 ppt)[a]**	**Historical MDCH (10 ppt)[b]**
Background[c] Exceedence Frequency	2/2	0/2	0/2
Background[c] Median (1.0 ppt) Exceeds Screening Value?	Yes	No	No
Area 1 Exceedence Frequency	8/10	0/10	0/10
Area 1 Exceedence Percentages	(80%)	(0%)	(0%)
Area 1 Median (0.73 ppt) Exceeds Screening Value?	Yes	No	No

a – Table 6 from MDCH, 2013
b – Table 5 from MDEQ, 2011
c – Background samples collected in 1993

The Area 1 dioxin TEQ concentrations for smallmouth bass fillet samples collected in 2009 ranged from 0.40 ppt to 2.75 ppt. These values are less than the screening value for fish advisories of 10 ppt for dioxins (MDEQ 2011). A recent Health Consultation Technical Background Document from MDCH on dioxins indicates that these screening values may be updated in the near future to the values presented on Table 6 of the Health Consultation (MDCH 2013). Table 2 above compares individual fish concentrations from Area 1 and background samples to the MDCH values for 16 meals per month (0.5 ppt) and 1 meal per month (7.5 ppt) to provide a range of comparison values. Both Area 1 and the background area had individual concentrations that exceeded the 16 meals per month level. Neither exceeded the one meal per month or the 10 ppt screening values.

According to MDEQ's Annual Edible Portions Report, "Fish are placed into the consumption advisory categories according to species and size, based on linear regression analyses or median total PCB concentrations" (MDEQ 2011). Dioxins are assumed to be handled in the same manner as PCBs, using the median concentration to compare to MDCH screening values and risk based concentrations. Therefore, median concentrations are provided for these data sets. The median dioxin TEQ concentrations for Area 1 and background samples were 0.73 ppt, and 1.0 ppt, respectively. Slightly higher detection limits in the 1993 background samples compared to the 2009 Area 1 data may account for the background median value being slightly higher than Area 1 median concentration. The background and Area 1 median concentrations are considered to be similar, given the limited number of and slightly lower detection limits for the Area 1 samples. The Area 1 median concentration would place fish in the 8 meals per month category for allowable fish consumption.

The Table 3 below summarizes the number of samples and the percentage of samples by year that exceeded the Site-specific risk-based concentrations for smallmouth bass.

Table 3: ***Number and Percentage of 2009 Smallmouth Bass Fillet Tissue Samples Exceeding Site-Specific Dioxin Risk Based Concentrations for Area 1 and Background***

2009	**Subsistence Angler (0.9 ppt)**	**High End Sport Angler (2.5 ppt)**	**Central Tendency Sport Angler (6.6 ppt)**
Background[a] Exceedence Frequency	1/2	0/2	0/2
Background Median (1.0 ppt) Exceeds RBC?	Yes	No	No
Area 1 Exceedence Frequency	3/10	1/10	0/10
Area 1 Exceedence Percentages	(30%)	(10%)	(0%)
Area 1 Median (0.73 ppt) Exceeds RBC?	No	No	No

a – Background samples collected in 1993

The median dioxin concentration in fish tissue for the most recent data (2009) is within acceptable limits for the subsistence angler, and high-end and central tendency sport anglers who consume smallmouth bass in Area 1. The median of the fish samples was also less than the median of background levels. Therefore, the median dioxin TEQ concentrations for smallmouth fish fillet tissue in Area 1 do not pose an unacceptable risk based on a comparison to risk-based screening levels and background for the recent data.

REFERENCES

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